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10/689,018	10/20/2003	Maarten Menzo Wentink	088245-2591	4108

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EXAMINER	
TAYLOR, NICHOLAS R	

ART UNIT	PAPER NUMBER
2441	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)
	10/689,018	WENTINK, MAARTEN MENZO
	Examiner	Art Unit
	Nicholas Taylor	2441

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 July 2010*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14,17,18,21-23 and 25-32* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-14,17,18,21-23 and 25-32* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *20 October 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-14, 17, 18, 21-23, and 25-32 have been presented for examination and are rejected.

Response to Arguments

2. Applicant's arguments filed July 12th, 2010, have been fully considered but they are deemed not persuasive.

3. In the remarks, applicant argued in substance that:

(A) The prior art of Li and Cali does not teach determining a first average backoff interval by measuring an average wait time that the first station incurred during a plurality of previous access attempts to the shared resource and refraining from contending for access to the shared resource for at least an interval substantially equal to the first average backoff interval.

As to point (A), Li teaches determining a first average backoff interval by measuring an average wait time that one of said plurality of stations incurred during previous access attempts to the shared resource (Li, see overview of paragraphs 0014-0016, fig. 5, and paragraphs 0059-0064, where the backoff interval is determined by measuring an average wait time from previous access attempts). Li determines a

backoff rate that is dynamically adjusted to improve network throughput (paragraph 0014). The backoff value is adjusted based on incurred average wait time that the stations incur during previous access attempts and represents an average interval to wait to prevent further congestion (paragraphs 0014, 0016, 0059-0064). Li teaches measuring an average wait time through network characteristics including, inter alia, collision rate that is determinative of network throughput. A broadest reasonable interpretation of the claim term “average wait time” would include a measurement of network throughput, as the successful transmission ratio of the network would determine the amount of time that a station would have to wait for successful access. Applicant argues that the claimed term “average wait time” is more specific, thereby excluding calculations that take into account collision counts and other network characteristics in determining the wait time incurred. While the claims are interpreted in light of the specification, such limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

However, Li is silent as to measuring an average wait time that the first station incurred during a plurality of previous access attempts to the shared resource, as Li instead draws on a broader range of average wait times in calculating a first average backoff interval. In a similar field of endeavor, Cali teaches an improved method of calculating an average backoff interval value using average wait time (pg. 1774, section 1, description of author's proposal; see also pg. 1776 section B describing calculating the backoff window). The average wait time is determined based on the station's plurality of previous attempts to access the shared resource (see pg. 1778 discussion of

observing prior channel access). Further, the average wait time is measured from a time that the station determines the resource has become idle to a time that that a pending frame is transmitted, and calculating an average of the wait times (see pg. 1778, calculation of timing, including basing the calculation on a moving average).

(B) The prior art of Li and Cali are not obvious to combine, as the references teach away from any reasonable combination.

As to point (B), it would have been obvious to one of ordinary skill in the art, at the time the invention was made, to have combined the references of Li and Cali to provide the average backoff interval calculation of Cali in the system of Li, because doing so would provide a transmission interval that approaches the theoretical capacity limits of the IEEE 802.11 MAC protocol capacity (see Cali, abstract). Both systems are directed to determining efficient backoff intervals using algorithms that are based on station channel status information (Li, paragraph 0053; Cali, abstract). One having ordinary skill in the art would look to known systems in a similar field of endeavor (e.g., available 802.11 interval calculation algorithms) to combine the system in known ways (software programming, where both systems use standardized 802.11 protocol variables) to yield predictable results (i.e. tuned backoff algorithms that provide better throughput yields; see Cali, pg. 1774 introduction).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1, 2, 4-7, 13, 17, 22, 25, 28, 30, and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Li et al. (U.S. PGPub 2002/0163929) and Cali et al. ("IEEE 802.11 Protocol: Design and Performance Evaluation of an Adaptive Backoff Mechanism").

6. As per claims 1, 13, and 22, Li teaches a method for accessing a shared resource comprising:

a first station sharing a resource with a plurality of other stations; (Li, see architecture and shared medium of paragraphs 0032, 0033 and fig. 1)

the first station determining a first average backoff interval by measuring an average wait time that the first station incurred during a plurality of previous access attempts to the shared resource; and (Li, see overview of paragraphs 0014-0016, fig. 5, and paragraphs 0059-0064, where the average backoff interval is determined by measuring an average wait time from previous access attempts)

once it is determined that the first station desires access to the shared resource and the shared resource first becomes available, the first station refraining from contending for access to said shared resource for at least an interval substantially equal to the first average backoff interval (Li, see paragraphs 0065-0067, and fig. 6, where the

station is prevented from contending for access until an interval equal to the first average backoff interval has passed).

Li teaches the above, including measuring an average wait time that is based on the present collision rate that is determinative of successful network throughput to determine a first backoff interval (see generally paragraph 0014-0016). However, Li is silent as to measuring an average wait time that the first station incurred during a plurality of previous access attempts to the shared resource.

In a similar field of endeavor, Cali teaches an improved method of calculating an average backoff interval value using average wait time (pg. 1774, section 1, description of author's proposal; see also pg. 1776 section B describing calculating the backoff window). The average wait time is determined based on the station's plurality of previous attempts to access the shared resource (see pg. 1778 discussion of observing prior channel access). Further, the average wait time is measured from a time that the station determines the resource has become idle to a time that that a pending frame is transmitted, and calculating an average of the wait times (see pg. 1778, calculation of timing, including basing the calculation on a moving average).

It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to have combined Li and Cali to provide the average backoff interval calculation of Cali in the system of Li, because doing so would provide a transmission interval that approaches the theoretical capacity limits of the IEEE 802.11 MAC protocol capacity (see Cali, abstract). Further, both systems are directed to determining efficient backoff intervals using algorithms that are based on station

channel status information (Li, paragraph 0053; Cali, abstract). One having ordinary skill in the art would look to known systems (e.g., available 802.11 interval calculation algorithms) to combine the system in known ways (software programming, where both systems use standardized 802.11 protocol variables) to yield predictable results (tuned backoff algorithms that provide better throughput yields; see Cali, pg. 1774 introduction).

7. As per claim 2, Li-Cali teaches the system further comprising the first station transmitting a frame to one of the other stations using the shared resource after said first average backoff interval has passed, wherein said shared resource is a shared-communications channel (Li, see architecture and shared medium of paragraphs 0032, 0033 and fig. 1, where frames are transmitted after intervals have passed).

8. As per claim 4, Li-Cali teaches the system further wherein said average backoff interval is further based on a moving average (Cali, see pg. 1778, calculation of timing, including basing the calculation on a moving average).

9. As per claims 5, Li-Cali teaches the system further comprising the first station refraining from contending for access to the shared resource for a second random backoff interval beyond said first determined average backoff interval (Li, see overview of paragraphs 0014-0016, fig. 5, and paragraphs 0059-0064; see also Cali, pgs. 1776 and 1777).

10. As per claim 6, Li-Cali teaches the system further wherein said second random backoff interval assumes a nonzero value only after an unsuccessful attempt to transmit occurs (Li, see overview of paragraphs 0014-0016, fig. 5, and paragraphs 0059-0064; see also Cali, pgs. 1776 and 1777).

11. As per claim 7, Li-Cali teaches the system further wherein said backoff interval is constrained to be at least as long as an IEEE 802.11 distributed interframe space (Cali, see, e.g., pg. 1776 use of DIFS minimum interval).

12. As per claims 17, and 25, Li-Cali teaches the system further wherein said shared resource is a shared-communications channel and wherein said transmitter communicates over the shared-communications channel in accordance with an IEEE 802.11 protocol (Cali, pgs. 1774 and 1775).

13. As per claims 28, 30, and 32, Li-Cali teaches the system further wherein the first station measuring an average wait time comprises: the first station measuring a plurality of wait times, each wait time measured (i) from a time that the first station first determines that the shared resource has become idle (ii) to a time that the first station actually transmits a pending frame on the shared resource; and calculating an average of the plurality of wait times (Cali, see pg. 1778, calculation of timing, including basing the calculation on a moving average; see also pg. 1776 and 1777).

14. Claims 3, 8-12, 14, 18, 21, 23, 26, 27, 29, and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Li et al. (U.S. PGPub 2002/0163929) and Cali et al. ("IEEE 802.11 Protocol: Design and Performance Evaluation of an Adaptive Backoff Mechanism"), further in view of Singh et al. ("PAMAS – Power Aware Multi-Access Protocol with Signaling for Ad Hoc Networks").

15. As per claims 3, 14, and 23, Li-Cali teaches the above, yet fails to teach the system further comprising, after the first average backoff interval is determined, the first station powering down a receiver circuit for at least a portion of said first average backoff interval while the first station is refraining from contending for access to the shared resource.

Singh teaches a wireless resource sharing system (Singh, sections 1 and 2) that powers down a station access a shared resource during intervals in which the station refrains from accessing the resource (see section 2.1 describing IEEE 802.11 nodes that power down when refraining from transmission over the shared resource). Singh additionally teaches the use of the 802.11 protocol specification (section 2.1).

It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to have combined Li-Cali and Singh to provide the power saving of Singh in the system of Li-Cali, because doing so would allow the use of a power-saving mode that is beneficial for conserving battery power in mobile stations (see Singh, section 2.1 discussing the importance and need for power conservation in devices when transmission cycles are not taking place; see also Conclusion section). Further, one of

ordinary skill in the art looking to create a station with the commonly understood benefit of an extended battery life would look to prior art teachings that facilitate intelligent power conservation. Singh, which discloses a shared resource communication system, provides one such predictable solution in the form of an intelligent component power-down when communication is not necessary or not possible.

16. As per claims 8 and 18, Li teaches a system comprising:

a station and an access point communicating over a shared resource, (Li, see architecture and shared medium of paragraphs 0032, 0033 and fig. 1)

the access point configured to:

determine a first average backoff interval value by measuring an average wait time that the access point incurred during a plurality of previous attempts to access the shared resource; and distribute the first average backoff interval value to the station, (Li, see overview of paragraphs 0014-0016, fig. 5, and paragraphs 0059-0064, where the backoff interval is determined by measuring an average wait time from previous access attempts)

the station configured to:

transmit data over said shared resource; receive the first average backoff interval value from said access point; once it is determined that the station desires access to the shared resource and the shared resource first becomes available, to refrain from contending for access to said shared resource for at least a first average interval substantially equal to said first backoff interval value; and (Li, see paragraphs 0065-

0067, and fig. 6, where the station is prevented from contending for access until an interval equal to the first backoff interval has passed)

power down a receiver circuit for at least a portion of said first interval while the station refrains from accessing the shared resource.

Li teaches the above, including measuring an average wait time that is based on the present collision rate that is determinative of successful network throughput to determine a first backoff interval (see generally paragraph 0014-0016). However, Li is silent as to measuring an average wait time that the first station incurred during a plurality of previous access attempts to the shared resource.

In a similar field of endeavor, Cali teaches an improved method of calculating a backoff interval value using average wait time (pg. 1774, section 1, description of author's proposal; see also pg. 1776 section B describing calculating the backoff window). The average wait time is determined based on the station's plurality of previous attempts to access the shared resource (see pg. 1778 discussion of observing prior channel access). Further, the average wait time is measured from a time that the station determines the resource has become idle to a time that that a pending frame is transmitted, and calculating an average of the wait times (see pg. 1778, calculation of timing, including basing the calculation on a moving average).

It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to have combined Li and Cali to provide the average backoff interval calculation of Cali in the system of Li, because doing so would provide a transmission interval that approaches the theoretical capacity limits of the IEEE 802.11

MAC protocol capacity (see Cali, abstract). Further, both systems are directed to determining efficient backoff intervals using algorithms that are based on station channel status information (Li, paragraph 0053; Cali, abstract). One having ordinary skill in the art would look to known systems (e.g., available 802.11 interval calculation algorithms) to combine the system in known ways (software programming, where both systems use the standardized 802.11 protocol variables) to yield predictable results (tuned backoff algorithms that provide better throughput yields; see Cali, pg. 1774 introduction).

Li further fails to teach wherein the system powers down a receiver circuit for at least a portion of said first interval while the station refrains from accessing the shared resource.

Singh teaches a wireless resource sharing system (Singh, sections 1 and 2) that powers down a station access a shared resource during intervals in which the station refrains from accessing the resource (see section 2.1 describing IEEE 802.11 nodes that power down when refraining from transmission over the shared resource). Singh additionally teaches the use of the 802.11 protocol specification (section 2.1).

It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to have combined Li-Cali and Singh to provide the power saving of Singh in the system of Li-Cali, because doing so would allow the use of a power-saving mode that is beneficial for conserving battery power in mobile stations (see Singh, section 2.1 discussing the importance and need for power conservation in devices when transmission cycles are not taking place; see also Conclusion section). Further, one of

ordinary skill in the art looking to create a station with the commonly understood benefit of an extended battery life would look to prior art teachings that facilitate intelligent power conservation. Singh, which discloses a shared resource communication system, provides one such predictable solution in the form of an intelligent component power-down when communication is not necessary or not possible.

17. As per claim 9, Li-Cali-Singh teaches the system further comprising the first station transmitting a frame to one of the other stations using the shared resource after said first average backoff interval has passed, wherein said shared resource is a shared-communications channel (Li, see architecture and shared medium of paragraphs 0032, 0033 and fig. 1, where frames are transmitted after intervals have passed).

18. As per claim 10, Li-Cali-Singh teaches the system further wherein said first average backoff interval is further based on a moving average (Cali, see pg. 1778, calculation of timing, including basing the calculation on a moving average).

19. As per claims 11 and 21, Li-Cali-Singh teaches the system further wherein the station refrains from contending for access to the shared resource for a second random backoff interval beyond said first average backoff interval (Li, see overview of paragraphs 0014-0016, fig. 5, and paragraphs 0059-0064; see also Cali, pgs. 1776 and 1777).

20. As per claim 12, Li-Cali-Singh teaches the system further wherein said second random backoff interval assumes a nonzero value only after an unsuccessful attempt to transmit occurs (Li, see overview of paragraphs 0014-0016, fig. 5, and paragraphs 0059-0064; see also Cali, pgs. 1776 and 1777).

21. As per claims 26 and 27, Li-Cali-Singh teaches the system further comprising the first station powering down a transmitter circuit for at least the same portion of the first average backoff interval (Singh, see section 2.1 describing IEEE 802.11 nodes that power down when refraining from accessing the resource).

22. As per claims 29 and 31, Li-Cali-Singh teaches the system further wherein measuring an average wait time comprises: the access point being configured to measure a plurality of wait times, each wait time measured (i) from a time that the access point first determines that the shared resource has become idle (ii) to a time that the access point actually transmits a pending frame on the shared resource; and the access point being configured to calculate an average of the plurality of wait times (Cali, see pg. 1778, calculation of timing, including basing the calculation on a moving average; see also pg. 1776 and 1777).

Conclusion

23. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nicholas Taylor whose telephone number is (571) 272-3889. The examiner can normally be reached on Monday-Friday, 8:30am to 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wing Chan can be reached on (571) 272-7493. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/NT/
Nicholas Taylor
Examiner
Art Unit 2441

/Larry Donaghue/
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